L0001802

202.393.3903, ext. 112
dlewis@lewisharrison.com

LEWIS & HARRISON
Consultants in Government Affairs

122 C Street, N.W., Suite 505
Washington, D.C. 20001
telephone 202.393.3903
fax 202.393.3906

September 25, 2017

Document Processing Desk – FIFRA §6(a)(2) Submission
Office of Pesticide Programs
U.S. Environmental Protection Agency
Room S-4900, One Potomac Yard
2777 South Crystal Drive
Arlington, VA 22202

SUBJECT: ***Nissan Chemical Industries, Ltd.***
Quizalofop-P-ethyl (EPA Chemical No. 128709)

Dear Sir or Madam:

This submission is being provided pursuant to FIFRA §6(a)(2) and the implementing regulations in 40 C.F.R. §159 for the active ingredient Quizalofop-P-ethyl. This active ingredient is currently undergoing additional testing in the European Union for honey bee toxicity. As part of the testing program, a single exposure Honey Bee (*Apis mellifera*) larval toxicity test has been conducted. This submission provides the summary of results to date. A final report is not yet available.

The current Honey Bee acute contact LD_{50} for Quizalofop-P-ethyl has been estimated at >50µg ai/bee, based on testing results from MRID No. 00150942. Based on the measured concentrations in the dose preparations, the calculated LD_{50} value for Quizalofop-P-ethyl to honey bee larvae was consistent with those results at 24 hours (247 µg ai/bee) and 48 hours (59.3 µg ai/bee). At 72 hours, the LD_{50} value for Quizalofop-P-ethyl to honey been larvae was estimated to be 13.8 µg a.s./bee larva. While not inconsistent with earlier results, the LD_{50} values determined from this preliminary evaluation of the data may be lower than results currently on file.

A copy of the Second Definitive Results Summary WJ95VS is enclosed for reference.

If there are any questions, or if any further information is needed, please let me know.

Sincerely yours,

E. David Lewis
Agent for,
Nissan Chemical Industries, Ltd.

Enclosure

Quizalofop-P-ethyl

Honey Bee (*Apis mellifera*) larval toxicity test, single exposure

Second definitive results summary WJ95VS

METHOD

The test design comprised a water control and Quizalofop-P-ethyl applied at concentrations of 4.27, 9.39, 20.66, 45.45 and 100 µg a.s./larva. A total of 36 larvae, 12 from each of three different hives were used for each test treatment rate and the water control.

On arrival at the test facility on Day 1 of the study, bee larvae, fed 20 µL of diet A, in individual grafting cells in 48-well plates were housed in a desiccator cabinet with a water saturated atmosphere in the dark at *ca.* 34°C. Larvae were fed 20 µL diet B on Day 3 and the dose was administered in 30 µL Diet C on Day 4. Larvae were fed 40 µL and 50 µL Diet C on Days 5 and 6 respectively. Assessments of mortality were made 24, 48 and 72 hours after dosing (Days 5, 6 and 7 respectively).

RESULTS

The mean measured concentrations in the acetone stock solutions were 2.54, 5.96, 13.70, 30.00 and 65.90 mg a.s./mL, 100.8, 95.2, 99.5, 99.0 and 98.8% of nominal. The mean measured concentrations in the dose preparations were 0.12, 0.24, 0.62, 1.43 and 3.56 mg a.s./mL, 84.5, 76.7, 90.0, 94.4 and 106.8% of nominal. The actual dose concentrations were calculated as 3.61, 7.20, 18.59, 42.90 and 106.8 µg a.s./larva.

Mortality in the water and acetone controls was 3 and 8% respectively. Corrected larval mortality of 6, 24, 67, 88 and 94% was recorded at nominal rates of 4.27, 9.39, 20.66, 45.45 and 100 µg a.s./larva respectively, 72 hours after dose administration (Table 1). Reduced diet consumption was recorded for 24, 34, 36, 36 and 36 of the 36 larvae dosed at nominal rates of 4.27, 9.39, 20.66, 45.45 and 100 µg a.s./larva after 24 hours and 4, 10, 25, 32 and 34 of these larvae subsequently died, (Table 2). No additional reduced diet consumption was recorded in the Quizalofop-P-ethyl treatments at subsequent assessments. No reduced diet consumption was recorded in the water control. Reduced diet consumption was recorded for 12 larvae of the solvent control after 24 hours and two of these subsequently died. No additional reduced diet consumption was recorded in the solvent control at 48 or 72 hours.

In the dimethoate treatment reduced diet consumption was recorded for 13 larvae of which 12 subsequently died. Reduced diet consumption was recorded for an additional two larvae at 48 hours of which one subsequently died.

Based on the measured concentrations in the dose preparations t he 72-hour LD_{50} value for Quizalofop-P-ethyl to honey bee larvae was estimated to be 13.8 µg a.s./larva, with a 95% confidence interval of 10.2, 19.1 µg a.s./larva.

Corrected mortality of 67% was recorded in the toxic reference treatment (dimethoate at 8.8 µg a.s./larva).

TABLE 1
Cumulative mortality data for honey bee larvae exposed to Quizalofop-P-ethyl

Assessment time (hours)	Measured concentration (µg a.s./bee)	Cumulative mortality (initial population: 10 per replicate)			Mortality (%)	Corrected mortality (%)	*p*
		Replicate 1	Replicate 2	Replicate 3			
24	Water control	0	0	0	0	0	>0.999
	Acetone control	0	0	0	0	-	-
	3.61	0	0	0	0	0	>0.999
	7.20	0	0	0	0	0	>0.999
	18.59	0	0	0	0	0	>0.999
	42.9	0	1	1	6	6	0.246
	106.8	6	1	0	19	19	0.006**
	Dimethoate	0	0	3	8	8	0.120
48	Water control	0	0	0	0	0	>0.999
	Acetone control	0	0	0	0	-	-
	3.61	0	1	0	3	3	0.500
	7.20	1	0	0	3	3	0.500
	18.59	2	2	6	28	28	<0.001***
	42.9	7	5	7	53	53	<0.001***
	106.8	9	5	6	56	56	<0.001***
	Dimethoate	8	4	6	50	50	<0.001***
72	Water control	0	1	0	3	0[a]	0.307
	Acetone control	1	1	1	8	-	-
	3.61	2	2	1	14	6	0.355
	7.20	5	2	4	31	24	0.017*
	18.59	8	7	10	69	67	<0.001***
	42.9	12	9	11	89	88	<0.001***
	106.8	12	10	12	94	94	<0.001***
	Dimethoate	10	6	9	69	67	<0.001***

p values are for comparison with the acetone control using 1 tailed Fisher's exact tests
Mortality was corrected using the acetone control
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
0[a] Mortality not corrected as mortality was less than control mortality

Corrected mortality was derived using Abbott's formula:

M = (Mt-Mc)/(100-Mc) x 100

Where:

Mt = % mortality of treated bees

Mc = % mortality of control bees

M = corrected mortality (%)

TABLE 2

Summary of effects on food consumption

Treatment	Nominal concentration (µg a.s./larva)	No. of replicates with surviving larvae and reduced food consumption first recorded at			Total number of dead larvae[a]	% mortality following reduced food consumption	Overall mortality at 72 hours (%)
		24 hours	48 hours	72 hours			
Water control	0	0	0	0	0	0	3
Acetone control	0	12	0	0	2	5.6	8
Quizalofop-P-ethyl	4.27	24	0	0	4	11.1	14
	9.39	34	0	0	10	27.8	31
	20.66	36	0	0	25	69.4	69
	45.45	36	0	0	32	88.9	89
	100	36	0	0	34	94.4	94
Dimethoate	8.8	13	2	3	13	36.1	69

[a] in replicates where reduced food consumption was recorded at 24 or 48 hours

TABLE 3

LD_{50} value for each assessment time

Time (hours)	LD_{50} (µg a.s./bee)	95% Confidence intervals (µg a.s./bee)
24	247	171, 1520
48	59.3	42.7, 96.4
72	13.8	10.2, 19.1

Analysis was by probit analysis on log dose, with non-zero control mortality.
Confidence intervals were calculated using the profile likelihood method.